REMARKS/ARGUMENTS

Favorable reconsideration of this application is requested in light of the following discussion.

Claims 4-8, 11, 13-15, and 18-32 are pending. No claims are amended or newly added. Claims 4-7, 11, and 22-27 are withdrawn. No new matter is added.

In the outstanding Office Action, Claims 8, 18-21, 28, and 29 were rejected under 35 U.S.C. § 103(a) as obvious over Ogahara (U.S. Patent No. 5,958,265) in view of Koshiishi et al. (U.S. Patent Pub. No. 2003/0106647, herein "Koshiishi"), and Nishikawa (JP 07-321184). Claims 13 and 14 were rejected under 35 U.S.C. § 103(a) as obvious over Ogahara, Koshiishi, Nishikawa, and Kanno et al. (U.S. Patent No. 6,373,681, herein "Kanno"). Claim 15 was rejected under 35 U.S.C. § 103(a) as obvious over Ogahara, Koshiishi, Nishikawa, and Masuda et al. (U.S. Patent Pub. No. 2002/0005252, herein "Masuda"). Claim 30 was rejected under 35 U.S.C. § 103(a) as obvious over Ogahara, Koshiishi, Nishikawa, and Hasegawa et al. (U.S. Patent No. 5,556,500, herein "Hasegawa"). Claims 31 and 32 were rejected under 35 U.S.C. § 103(a) as obvious over Ogahara, Koshiishi, Nishikawa, and Birang et al. (U.S. Patent No. 5,491,603, herein "Birang").

Regarding the rejection of independent Claim 8 as obvious over Ogahara, Koshiishi, and Nishikawa, that rejection is respectfully traversed by the present response.

Independent Claim 8 recites, in part:

> said heat exchange means further comprises a supply path that supplies the heat transfer medium to said groove;
>
> said controller is configured to control a pressure of the heat transfer medium supplied from said heat exchange means and configured to change the pressure of the heat transfer medium supplied in accordance with each of multiple steps of the plasma process; and
>
> the controller is configured to set the pressure of the heat transfer medium filled into said groove which is covered by said focus ring in contact with said electrostatic chuck to a non-zero level during conveying of the object to be processed into and out of said chamber so as to carry out cooling of said

> focus ring during conveying the object into and out of said chamber.

Thus, the controller sets the pressure of the heat transfer medium filled into the groove which is covered by the focus ring to a non-zero level during conveying of the object to be processed into and out of the chamber so as to carry out cooling of the focus ring during conveying the object into and out of the chamber.

As discussed in the previous response, one benefit of the arrangement recited in Claim 8 is that it is possible to prepare for the dry etching of a next water W, e.g., to more completely remove heat from the focus ring (30), and thus make dry etching conditions more uniform for all of the wafers W.

Ogahara describes a general process of heat exchange by using a gas. Ogahara describes that a gas with high thermal conductivity, such as helium, is supplied between a brim part (21) of a substrate holding plate (2) and a characteristic correction ring (9) above it, and that if the pressure of this gas is increased, a cooling effect is also obtained by the exchange of heat with the gas (Fig. 3, and col. 9, lines 44 to 55 and 59 to 62).

However, Ogahara merely suggests that the cooling effect is improved if the pressure of the gas with high thermal conductivity is increased to a predetermined pressure, and neither discloses nor suggests that the pressure of the gas with high thermal conductivity is set to a non-zero level during conveying of a substrate (10) into and out of a process chamber.

The outstanding Office Action acknowledges that "Ogahara does not explicitly teach ... that said controller is configured to control a pressure of the heat transfer medium supplied from said heat exchange means and configured to change the pressure of the heat transfer medium supplied in accordance with each of multiple steps of the plasma process; and still further that the controller is configured to set the pressure of the heat transfer medium filled into said groove which is covered by said focus ring in contact with said electrostatic chuck

to a non-zero level during conveying of the object to be processed into and out of said chamber."[1]

The outstanding Office Action relies on Koshiishi, Nishikawa, and citation of case law from *In re Schreiber*, 44 USPQ2d, 1429, to remedy the above-noted deficiencies in Ogahara.[2]

Koshiishi merely describes changing a DC voltage applied to a wafer-attracting electrode (22) (paragraph [0057]).

In the discussion of Koshiishi, the outstanding Office Action states "[f]urther, claim limitation 'said controller sets the chuck voltage applied to the chuck device high during at least one processing sequence' is a functional limitation, and since the structure of prior art meets the structural limitations of the claim, the same is considered capable of meeting this limitation."[3] The outstanding Office Action then cites *In re Schreiber* and states "claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function."[4]

In *In re Schreiber*, the Federal Circuit indicated that a funnel directed to dispensing oil from an oil can anticipated a funnel directed to dispensing popped popcorn from a container because the oil funnel had the same general shape as the funnel for popcorn recited in the rejected claim. In other words, in *In re Schreiber*, the cited reference disclosed a funnel with the same structure that could inherently perform the function recited in the rejected claim, i.e., dispensed popcorn.

In contrast, Claim 8 recites a **controller** that controls an apparatus to perform a certain function, e.g., "set the pressure of the heat transfer medium filled into the groove which is covered by the focus ring in contact with the electrostatic chuck to a non-zero level

[1] Outstanding Office Action, pages 4-5.
[2] Outstanding Office Action, pages 4-7.
[3] Outstanding Office Action, pages 5-6.
[4] Outstanding Office Action, page 6.

during conveying of the object to be processed into and out of the chamber so as to carry out cooling of said focus ring during conveying the object into and out of said chamber." In other words, a general controller **capable of being programmed** to perform the above-noted functions is not inherently capable of performing the above-noted functions the same way a funnel described as being used for dispensing oil from a can is inherently capable of inherently dispensing popcorn. Rather, a general purpose controller must be **modified** in order to perform the specific functions recited in Claim 8. Therefore, even if a general purpose controller is capable of being programmed or modified to perform the above-noted functions, the general purpose controller is not inherently capable of performing the functions recited in Claim 8 as the general purpose controller exists in its disclosed state. Accordingly, Applicants respectfully submit that, contrary to the assertion on the top of page 6 of the outstanding Office Action, the structure of the cited references does not meet "the structural limitations of the claim." Rather, a general purpose controller as described in Koshiishi must be further modified in order to perform the functions recited in the controller of Claim 8. However, there is no apparent reason of record for such a modification.

Nishikawa describes that heat-transfer gas supplying holes (7) supply a heat-transfer gas such as helium to a thin space formed between a rear surface of an object to be processed W and a chucking surface of an electrostatic chuck (12), the thin space transfers heat between the rear surface of the object and the chucking surface, a heat-transfer gas supplying pipe (18) is connected to the heat-transfer gas supplying holes (7), a buffer tank (21) disposed in the heat-transfer gas supplying pipe (18) adjusts a supplying pressure of the heat-transfer gas, and a valve (22) disposed in the heat-transfer gas supplying pipe (18) is closed so as to charge the buffer tank (21) with the heat-transfer gas at a predetermined rear surface pressure such as 10 Torr during replacement of the object W (paragraphs [0033] and [0036]).

However, Nishikawa merely describes charging the buffer tank (21) with the heat-transfer gas at the predetermined pressure during replacement of the object W, and neither describes nor suggest charging the thin space between the rear surface of the object W and the chucking surface of the electrostatic chuck (12) with the heat-transfer gas.

The reason why the buffer tank (21) is charged with the heat-transfer gas at the predetermined pressure is because the predetermined rear surface pressure can be secured immediately after the replacement of the object W. Nishikawa does not intend to prepare for processing of a next object W, in other words, to completely remove heat from a focus ring, and thus make processing conditions uniform for all of the objects W.

Not only is Nishikawa different from the arrangement recited in Claim 8 in the place to which the heat-transfer gas at the predetermined pressure is supplied, Nishikawa is different in its purpose of supplying the heat-transfer gas.

Kanno describes that an electrostatic chuck has a structure in which a wafer mounting surface of the chuck is provided with a dispersion groove (col. 2, lines 49 to 59).

Musada describes that a flow path (136B) of heat transfer gas is formed between a sample folder ring (132) and an electrostatic chucking device (131) and that a part of heat transfer gas for cooling wafer is introduced into the flow path (136B) (paragraph [0067]).

Hasegawa describes placing and attaching an annular thin plate part (116) formed of tungsten, etc., which corresponds to an outer part (106) of a focus ring (102) on an outer circular surface of a base part (114) which corresponds to an inner part (104) of the focus ring (102) (col. 9, lines 51 to 60 and FIG. 6), and describes placing and attaching an annular thin plate part (124) formed of amorphous carbon, etc., which corresponds to the inner part (104) on an inner circular surface of a base part (126) of the focus ring (102) (col. 9, line 65 to col. 10, line 6 and FIG. 6).

Birang describes that shortly before a wafer (101) drops onto a chuck (110) or after the wafer drops onto an upper dielectric (114) of the chuck (110), a chucking voltage supply (120) applies a high DC voltage, on the order of +2000 volts to a chuck electrode (133) relative to ground (col. 3, lines 19 to 23 and 36 to 44).

None of Koshiishi, Kanno, Musada, Hasegawa or Birang disclose or suggest controlling the pressure of heat transfer gas during conveying of a wafer (an object to be processed) into and out of a chamber. Thus, Claim 8 and all of the claims depending therefrom patentably distinguish over any reasonable combination of the cited references.

Consequently, in light of the above discussion, Applicants respectfully submit that the present application is in condition for allowance. An early and favorable action to that effect is respectfully requested.

Should Examiner Dhingra deem that any further action is necessary to place this application in even better form for allowance, he is encouraged to contact Applicants' undersigned representative at the below-listed telephone number.

Respectfully submitted,

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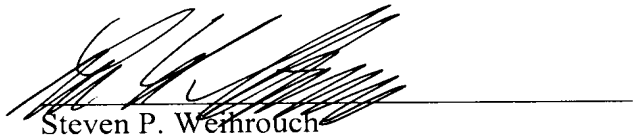

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